



AEROFLEX

TQ 18 Series Brushless D.C. Torque Motor

DESCRIPTION

Aeroflex has developed and perfected the TQ series DC Torque Motors to fill the needs of servo equipment designers for a precise, limited rotation actuator having infinite resolution, linear torque output and complete reliability. The TQ series motors feature a unique permanently magnetized rotor and a special stator winding to develop smooth, step-free torque with no mechanical restraints due to friction, motor ripple or "slot lock" effects.

Since the TQ motors have no commutators, brushes or slip rings, they are completely free from radio noise, explosion, friction or maintenance problems. Due to the complete mechanical isolation between the driving and driven members, the operational life of the TQ motors at full rated power is not limited by wear considerations. Throughout their virtually unlimited service life the motors continue to provide high peak torques, low power drain and infinite precise angular resolution. Power is not dissipated in a fixed field phase (when no torque is delivered) and the power supply is, therefore, utilized at optimum efficiency. Depending on the duty cycle and power available, a peak torque capacity is provided which is considerably higher than the rated continuous duty torque.

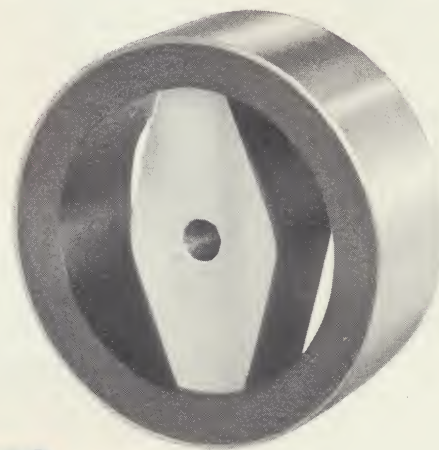
Developed originally as a zero-friction, precision actuator for Aeroflex gyro stabilized aerial camera platforms, the brushless DC Torque Motors represent a significant advance in electromagnetic rotary positioning. They have applications in:

Inertial Systems . . . Remote Positioning Devices . . . Stable Platforms . . . Process Control Systems . . . Vane and Control Surface Actuators . . . Throttle Control Systems . . . Chart Recorder Pen-motor . . . Special Meter-movements . . . Computing Control Elements . . . Precision Load Testing . . . Multi-input Summing Transducers . . . Low Velocity, High Sensitivity Tachometers . . . Direct Servo Drives.

TORQUER AMPLIFIERS

Aeroflex provides a complete series of companion silicon transistorized amplifiers to match the brushless DC Torque Motors. The use of matched Aeroflex Torque Motors and Amplifiers provides:

- Minimum power dissipation in the amplifier
- Optimum frequency response
- Protection from abnormal signal inputs



FEATURES

- No commutator, brush or contact friction
- Unlimited life
- Infinite resolution
- Linear torque output vs. current input
- No radio noise or explosion hazard
- No motor ripple or "slot lock"
- Fully qualified to NASA and Military Specification environments
- Proven in outer space
- Fully submersible
- Others available from .1 oz. in. to 100 lb. ft. and up to $\pm 60^\circ$

PERFORMANCE AND CHARACTERISTICS

Continuous Torque Rating	4 ounce inches
Angular Motion	± 60 degrees
Material Rotor Stator	Permanent magnet Epoxy encapsulated Aluminum outer ring
Weight	3.5 ounces
Mounting	Pancake, Flange or Synchro

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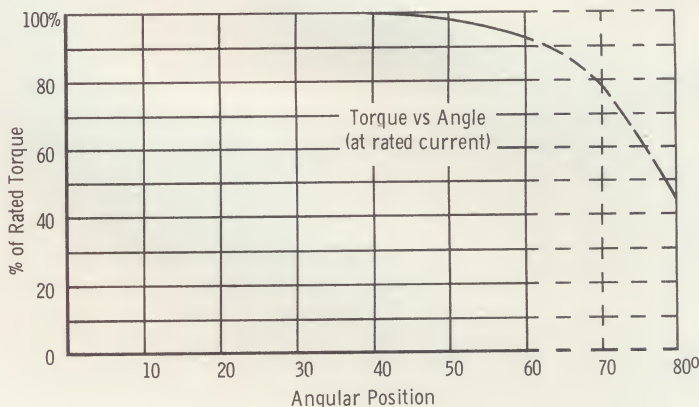
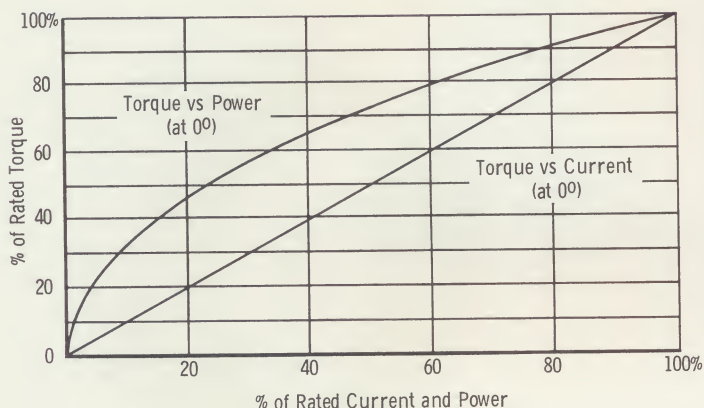
SOUTH SERVICE ROAD
PLAINVIEW, LONG ISLAND
NEW YORK



AEROFLEX

TQ 18 Series Brushless D.C. Torque Motor

SPECIFICATIONS



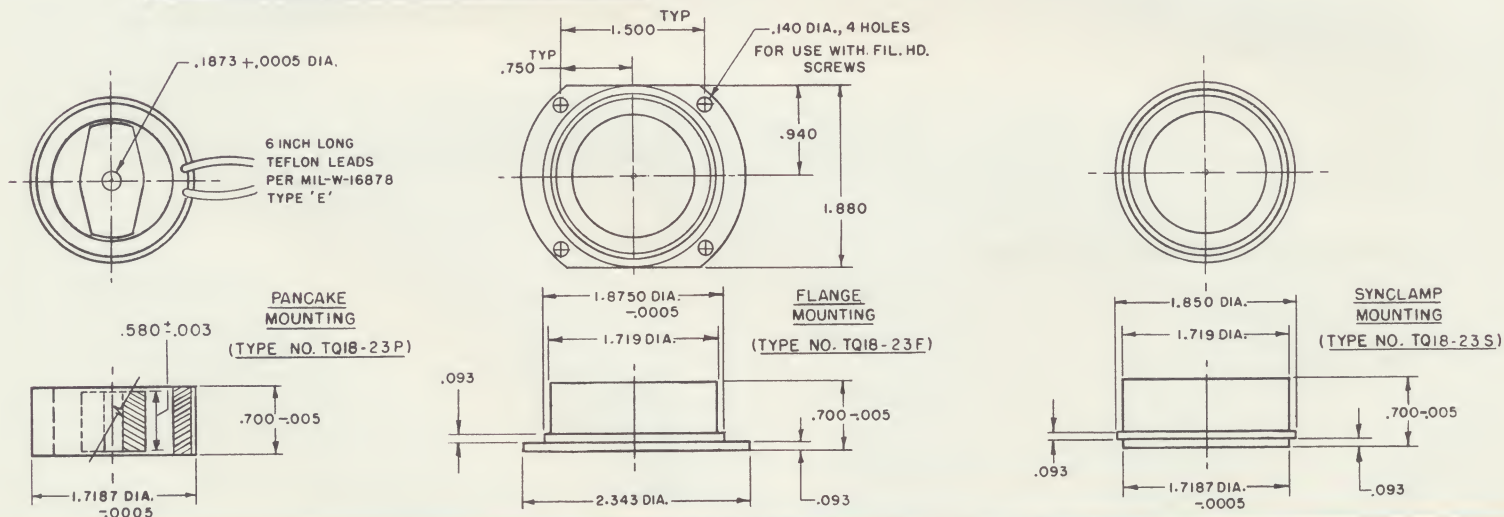
TQ18-23 TECHNICAL DATA

Rated torque 4 oz. in.
Angular motion ± 60 degrees
Friction None
Inductance and Resistance (L/R ratio)* 6×10^{-3}
Viscous damping:
(Infinite source impedance) 3.3×10^{-4} oz. in./rad./sec.
(Zero source impedance) 1.47×10^{-2} oz. in./rad./sec.

Ripple torque None
Rotor inertia 3.0×10^{-5} lb. in. sec.²
Back EMF* 0.07 volts/rad./sec.
Resistance at 25°C* 48 ohms
Sensitivity* 10 oz. in./amp.
Operating temperature range -65°F to 310°F

*These parameters are interdependent. The resistance can be selected to suit the application by varying the wire size.

DIMENSIONS



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AEROFLEX

TQ 34 Series Brushless D.C. Torque Motor

DESCRIPTION

Aeroflex has developed and perfected the TQ series DC Torque Motors to fill the needs of servo equipment designers for a precise, limited rotation actuator having infinite resolution, linear torque output and complete reliability. The TQ series motors feature a unique permanently magnetized rotor and a special stator winding to develop smooth, step-free torque with no mechanical restraints due to friction, motor ripple or "slot lock" effects.

Since the TQ motors have no commutators, brushes or slip rings, they are completely free from radio noise, explosion, friction or maintenance problems. Due to the complete mechanical isolation between the driving and driven members, the operational life of the TQ motors at full rated power is not limited by wear considerations. Throughout their virtually unlimited service life the motors continue to provide high peak torques, low power drain and infinite precise angular resolution. Power is not dissipated in a fixed field phase (when no torque is delivered) and the power supply is, therefore, utilized at optimum efficiency. Depending on the duty cycle and power available, a peak torque capacity is provided which is considerably higher than the rated continuous duty torque.

Developed originally as a zero-friction, precision actuator for Aeroflex gyro stabilized aerial camera platforms, the brushless DC Torque Motors represent a significant advance in electromagnetic rotary positioning. They have applications in:

Inertial Systems . . . Remote Positioning Devices . . .
Stable Platforms . . . Process Control Systems . . .
Vane and Control Surface Actuators . . . Throttle Control Systems . . . Chart Recorder Pen-motor . . . Special Meter-movements . . . Computing Control Elements . . . Precision Load Testing . . . Multi-input Summing Transducers . . . Low Velocity, High Sensitivity Tachometers . . . Direct Servo Drives.

TORQUER AMPLIFIERS

Aeroflex provides a complete series of companion silicon transistorized amplifiers to match the brushless DC Torque Motors. The use of matched Aeroflex Torque Motors and Amplifiers provides:

- Minimum power dissipation in the amplifier
- Optimum frequency response
- Protection from abnormal signal inputs



FEATURES

- No commutator, brush or contact friction
- Unlimited life
- Infinite resolution
- Linear torque output vs. current input
- No radio noise or explosion hazard
- No motor ripple or "slot lock"
- Fully qualified to NASA and Military Specification environments
- Proven in outer space
- Fully submersible
- Others available from .1 oz. in. to 100 lb. ft. and up to $\pm 60^\circ$

PERFORMANCE AND CHARACTERISTICS	
Continuous Torque Rating	40 ounce inches
Angular Motion	± 25 degrees
Material Rotor Stator	Permanent magnet Epoxy encapsulated Aluminum outer ring
Weight	1.0 pound
Mounting	Pancake, Flange or Synchro

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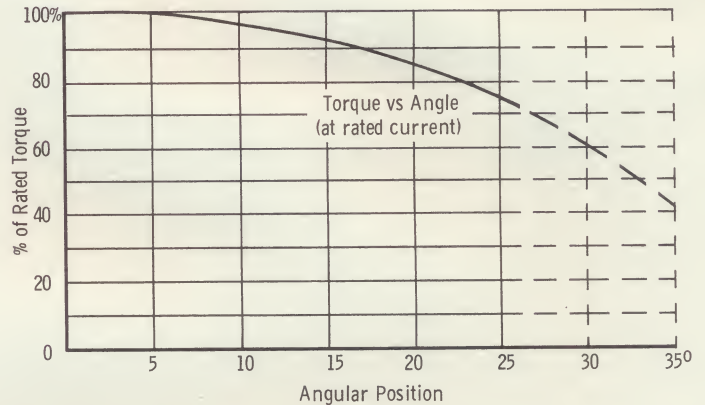
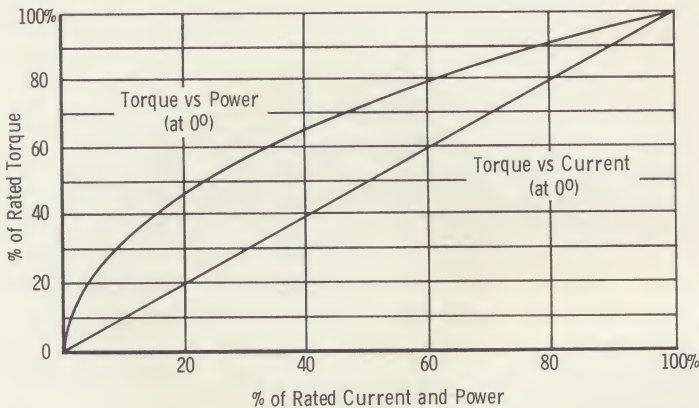
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NEW YORK



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TQ 34 Series Brushless D.C. Torque Motor

SPECIFICATIONS



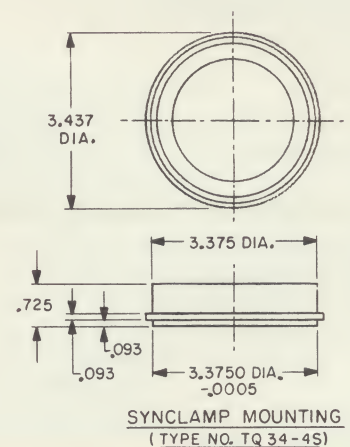
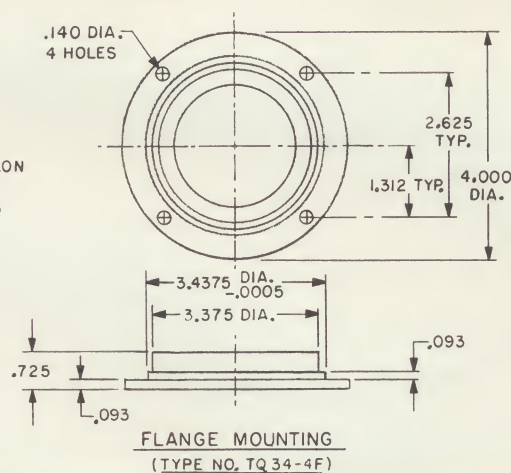
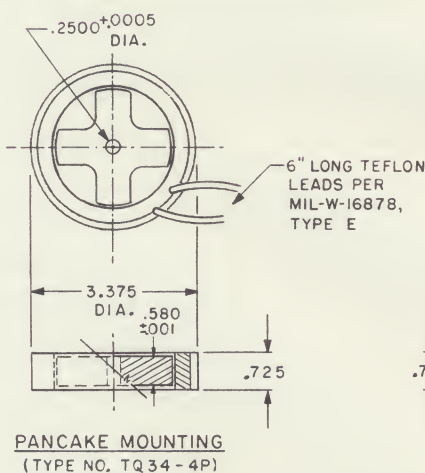
TQ34-4 TECHNICAL DATA

Rated torque 40 oz. in.
 Angular motion ± 25 degrees
 Friction None
 Inductance and Resistance (L/R ratio)* 1×10^{-3}
 Viscous damping:
 (Infinite source impedance) 1×10^{-2} oz. in./rad./sec.
 (Zero source impedance)558 oz. in./rad./sec.

Ripple torque None
 Rotor inertia 5.7×10^{-4} lb. in. sec.²
 Back EMF* 0.31 volts/rad./sec.
 Resistance at 25°C* 25 ohms
 Sensitivity* 45 oz. in./amp.
 Operating temperature range -65°F to 310°F

*These parameters are interdependent. The resistance can be selected to suit the application by varying the wire size.

DIMENSIONS



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AEROFLEX

TQ 52 Series Brushless D.C. Torque Motor

DESCRIPTION

Aeroflex has developed and perfected the TQ series DC Torque Motors to fill the needs of servo equipment designers for a precise, limited rotation actuator having infinite resolution, linear torque output and complete reliability. The TQ series motors feature a unique permanently magnetized rotor and a special stator winding to develop smooth, step-free torque with no mechanical restraints due to friction, motor ripple or "slot lock" effects.

Since the TQ motors have no commutators, brushes or slip rings, they are completely free from radio noise, explosion, friction or maintenance problems. Due to the complete mechanical isolation between the driving and driven members, the operational life of the TQ motors at full rated power is not limited by wear considerations. Throughout their virtually unlimited service life the motors continue to provide high peak torques, low power drain and infinite precise angular resolution. Power is not dissipated in a fixed field phase (when no torque is delivered) and the power supply is, therefore, utilized at optimum efficiency. Depending on the duty cycle and power available, a peak torque capacity is provided which is considerably higher than the rated continuous duty torque.

Developed originally as a zero-friction, precision actuator for Aeroflex gyro stabilized aerial camera platforms, the brushless DC Torque Motors represent a significant advance in electromagnetic rotary positioning. They have applications in:

Inertial Systems . . . Remote Positioning Devices . . . Stable Platforms . . . Process Control Systems . . . Vane and Control Surface Actuators . . . Throttle Control Systems . . . Chart Recorder Pen-motor . . . Special Meter-movements . . . Computing Control Elements . . . Precision Load Testing . . . Multi-input Summing Transducers . . . Low Velocity, High Sensitivity Tachometers . . . Direct Servo Drives.

TORQUER AMPLIFIERS

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- Minimum power dissipation in the amplifier
- Optimum frequency response
- Protection from abnormal signal inputs



FEATURES

- No commutator, brush or contact friction
- Unlimited life
- Infinite resolution
- Linear torque output vs. current input
- No radio noise or explosion hazard
- No motor ripple or "slot lock"
- Fully qualified to NASA and Military Specification environments
- Proven in outer space
- Fully submersible
- Others available from .1 oz. in. to 100 lb. ft. and up to $\pm 60^\circ$

PERFORMANCE AND CHARACTERISTICS	
Continuous Torque Rating	200 ounce inches
Angular Motion	± 60 degrees
Material Rotor Stator	Permanent magnet Epoxy encapsulated Aluminum outer ring
Weight	5.0 pounds
Mounting	Pancake or Flange

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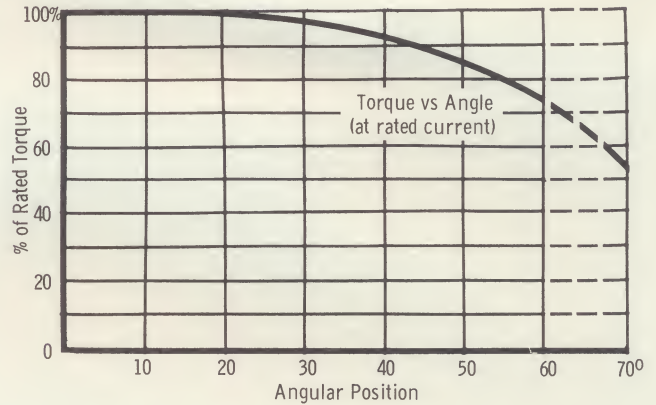
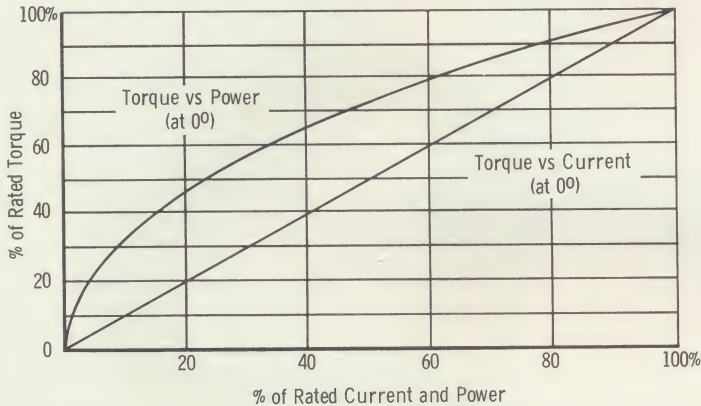
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TQ 52 Series Brushless D.C. Torque Motor

SPECIFICATIONS



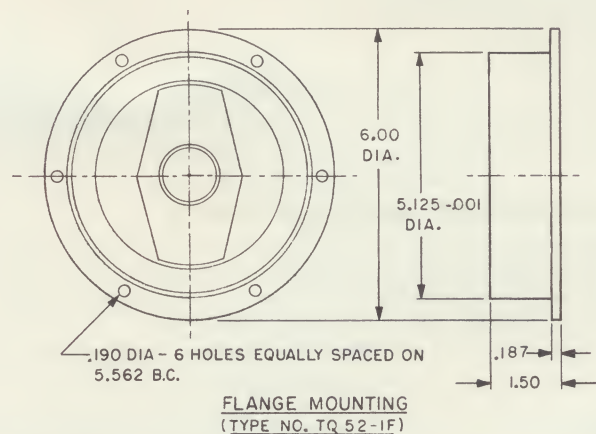
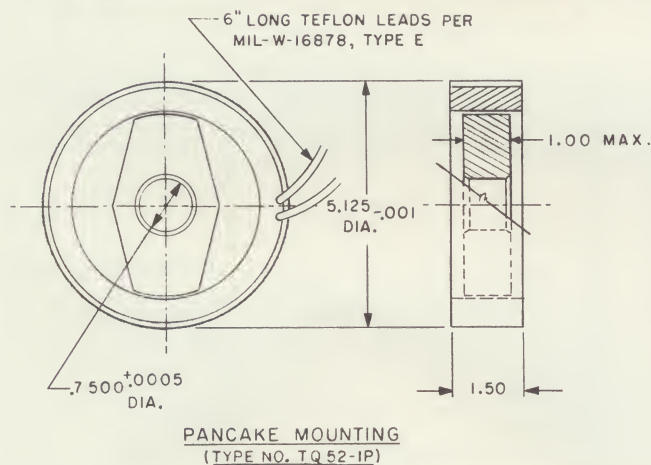
TQ 52-1 TECHNICAL DATA

Rated torque 200 oz. in.
 Angular motion ± 60 degrees
 Friction None
 Inductance and Resistance (L/R ratio)* .. 6.5×10^{-3}
 Viscous damping:
 (Infinite source impedance)
 1×10^{-2} oz. in./rad./sec.
 (Zero source impedance)
 4.39 oz. in./rad./sec.

Ripple torque None
 Rotor inertia 6.7×10^{-3} lb. in. sec.²
 Back EMF* 0.456 volts/rad./sec.
 Resistance at 25°C* 7 ohms
 Sensitivity* 66 oz. in./amp.
 Operating temperature range -65°F to 310°F

*These parameters are interdependent. The resistance can be selected to suit the application by varying the wire size.

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